

Can We Have All Species Simultaneously at B_{MSY} ?

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or 'Can We Have Our Fish and Eat it Too?'



GARM Ecosystem Terms of Reference

Provide analyses to determine if the Northeast Shelf LME (Large Marine Ecosystem) can support the reference point biomasses (summed BRPs) required for the GARM species as well as the other demersal and pelagic fish resources in the region.

Motivation: Earlier Analyses Suggested System is Energy Limited

ICNAF Two Tier System

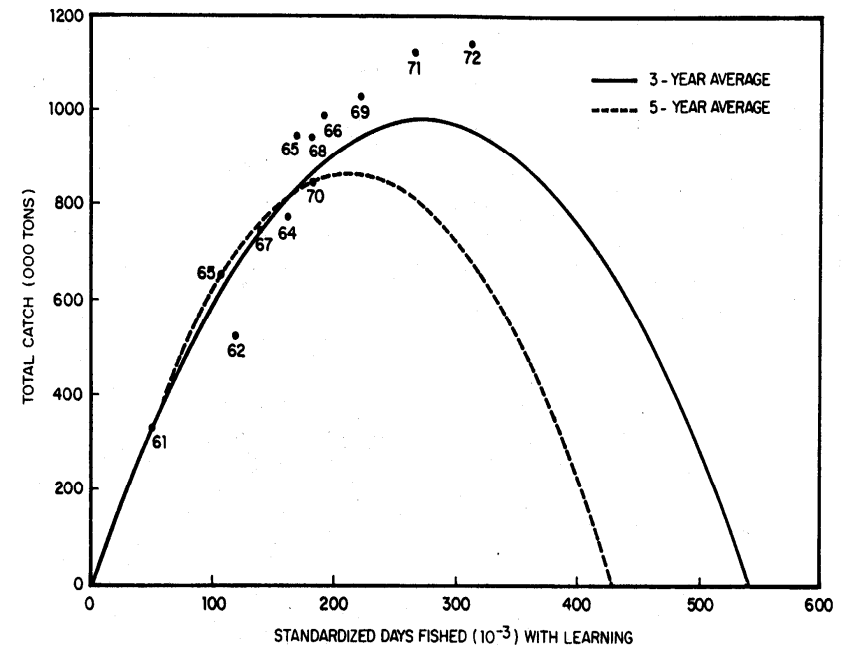
-Determine total system MSY:

MS MSY 980,000 MT

-Allocate catches for each species accounting for by-catch and making sure the total doesn't exceed system MSY

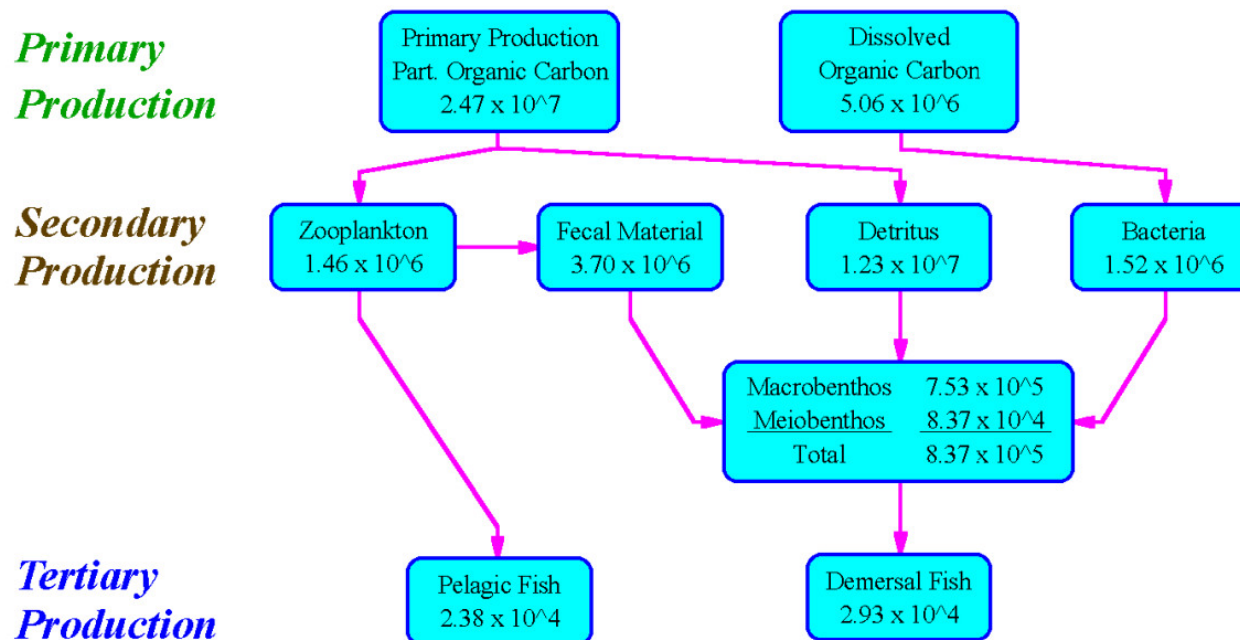
SS MSY 1,300,00 MT

Aggregate MSY ~30% lower than Sum of SS MSYs



Energy Constraints?

Earlier Energy Budgets for Georges Bank indicated Production Is “Tightly Bound” with Most Fish Production Consumed by Other Fish
(Cohen et al. 1982; Sissenwine et al. 1984)



Approach:

- Determine Combined B_{MSY} and/or MSY Levels for all Fish Species based on Single Species Analyses
 - Compare with other Temperate Systems
- Energy Budget Models
 - Shelfwide Ecopath and EcoNetWrk Models Based on EMAX Analyses
- Revisit Brown et al. (1976)
 - Develop Aggregate Surplus Production Models (ASPIC, ASP Models)
 - Estimate Fishery Production Potential and Primary Production Required to Sustain Fisheries